



MSHA's Accident Prevention Program Safety Idea

**SAFETY
IS A
VALUE!**

Hazards Created by Heating Closed Chambers

Category : Maintenance

Mine Type: All Mines

A common accident in the mining industry occurs when heat is applied to equipment during maintenance. The use of oxygen-acetylene torches to apply heat is a common tool on mine sites. It makes many tasks easier, but can also cause problems. Applying heat to a closed chamber will create a build-up of pressure, and in many cases cause an explosion. If lubricants are used, this can add an additional source of energy to the explosion. Below are pictures of a slurry pump impeller hub involved in a fatal accident. An analysis of this accident found:

Process Used

Did not refer to the operation manual.

Used pipe wrenches, steel pry bars, and hammers. Did not use the special tool recommended by the manufacturer to remove the impeller.

Possibly was attempting to remove the impeller by applying torque in the wrong direction. This unit uses standard threads not reverse threads.

Heated a closed containment (impeller hub) that contained combustible materials (grease or anti-seize compound).

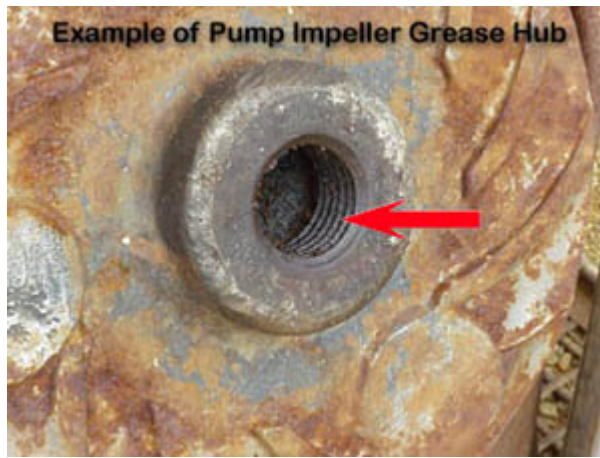
Should Have Used

Maintenance manuals to reference every time unfamiliar or technical maintenance work is attempted

A **special tool** by the manufacturer that locks the impeller in place so that the pump shaft can be rotated loosening the impeller. **The manual indicates the correct rotation.** The special tool only operates when the shaft is **rotated the correct direction.**

Read and followed manual and two warning labels on the pump legs which cautioned against heating impeller hubs.





Never heat an enclosed or confined space on a piece of equipment except as directed by the manufacturer.

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Remember – Safety is a Value that you can LIVE with!